DuPont Corporate Remediation Group
Barley Mill Plaza - Bldg 19
4417 Lancaster Pike
Wilmington, DE 19805

February 11, 2009

Mr. Frank Faranca
NJ Department of Environmental Protection
CHMM, Site Manager
Bureau of Case Management
401 East State Street
P.O. Box 028
Trenton, NJ 08625-0028

**Private Drinking Water Well Survey and Sampling Work Plan**
**DuPont Chambers Works Facility, Deepwater, New Jersey**
**(February 11, 2009)**

Dear Mr. Faranca:

E.I. DuPont de Nemours and Company (DuPont) is voluntarily conducting a Private Drinking Water Well Survey and Sampling Program within a two-mile radius surrounding the DuPont Chambers Works Facility in Deepwater, New Jersey. Attached please find 4 copies of the Private Drinking Water Well Survey and Sampling Work Plan, DuPont Chambers Works Facility, Deepwater, New Jersey (Work Plan). This Work Plan was prepared to describe the survey and sampling program and how the program will be implemented.

If you have any questions, please do not hesitate to call me at 302-992-6820.

Very truly yours,

Andrew S. Hartten
Project Director
Corporate Remediation Group – NJ

cc: Barry Tornic, USEPA Region II (3 copies)

# PRIVATE DRINKING WATER WELL SURVEY AND SAMPLING WORK PLAN DUPONT CHAMBERS WORKS FACILITY DEEPWATER, NEW JERSEY

Date: February 11, 2009

Project No.: 507872
18985513.00002

CORPORATE REMEDIATION GROUP
*An Alliance between*
*DuPont and URS Diamond*
Barley Mill Plaza, Building 19
Wilmington, Delaware 19805

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# 1.0 INTRODUCTION

The New Jersey Department of Environmental Protection (NJDEP) and the United Stated Environmnetal Protection Agency (USEPA) Region II have requested that E. I. du Pont de Nemours and Company (DuPont) test residential and business private drinking water wells for perfluorooctanoic acid (PFOA) around the DuPont Chambers Works Facility (Chambers Works) located in Deepwater, New Jersey. To address this NJDEP and USEPA Region II request and as part of DuPont ongoing stewardship, DuPont has volunteered (DuPont, 2008) to conduct the following activities.

- DuPont will voluntarily conduct a Private Drinking Water Well Survey and Sampling Program (survey and sampling program) within a two-mile radius surrounding Chambers Works in New Jersey.
- DuPont will sample qualified private drinking water wells which are within the two-mile radius surrounding Chambers Works, to determine if PFOA concentrations in drinking water wells measure 0.40 ppb or greater.
- In the event that any of the sampled private drinking water wells measure 0.40 ppb or greater PFOA, DuPont will offer to take appropriate measures to provide drinking water for consumption that is below 0.40 ppb PFOA.
- DuPont will continue to work with NJDEP to identify any additional private drinking water wells within the two-mile radius surrounding Chambers Works in New Jersey for inclusion in the survey and sampling program.

This Private Drinking Water Well Survey and Sampling Work Plan (Work Plan) is prepared to describe the survey and sampling program and how the program will be implemented. This Work Plan is organized into the following sections:

- Section 2.0 Private Drinking Water Well Survey and Sampling Program
- Section 3.0 Drinking Water Provisions
- Section 4.0 Schedule
- Section 5.0 References

Note that perfluorooctanoic acid (PFOA) is a disassociated form of ammonium perfluorooctanoate (APFO). MPI Research (MPI; formerly Exygen Research), located in State College, Pennsylvania, and New Jersey Certified for PFOA, will perform all water analysis for this project upon approval by NJDEP and USEPA Region II. During analysis, the perfluorooctanoate anion ($PFO^-$) is measured; however, the analytical results are mathematically converted and reported as APFO and PFOA by MPI. Therefore, analytical results for this survey and sampling program will be reported as APFO and PFOA. Additional information on analytical reporting can be found in the *Perfluorooctanoic Acid (PFOA) Quality Assurance Project Plan with Sampling and Analysis Plan, DuPont Chambers Works, Deepwater, New Jersey* (QAPP), which was submitted as Appendix A of the *Perfluorooctanic Acid Groundwater Investigation Work Plan* (DuPont, 2007) and was previously approved by NJDEP.

# 2.0 PRIVATE DRINKING WATER WELL SURVEY AND SAMPLING PROGRAM

This section describes the plan of work that will be implemented during the Private Drinking Water Well Sampling and Survey Program.

## 2.1 Survey Area and Well Search Results

Figure 1 provides the 2-mile boundary of the geographic area to be surveyed in New Jersey. 127 residential or business private drinking water wells were identified based on the results of a well search conducted by DuPont during the first quarter of 2008. The well search list continues to be updated through the analysis of tax and lot property lists for the geographic area within the 2-mile boundary. To preserve confidentiality, this updated well search list will be forwarded under separate cover to NJDEP and USEPA Region II. Several of the residences and businesses included in the well search list do not have complete mailing addresses. DuPont will continue to work with NJDEP to obtain complete mailing addresses for each residence and business listed in the spreadsheet so that all of these well owners can be included in the survey and sampling program.

## 2.2 Plan of Work

The plan of work for the Private Drinking Water Well Sampling and Survey Program is described below and implementing consists of three tasks:

- Public Notification and Eligibility Determination (Section 2.2.1)
- Sampling and Analysis (Section 2.2.2), and
- Reporting of Results (Section 2.2.3).

### 2.2.1 Public Notification and Eligibility Determination

The public notification process described below is being finalized and maybe modified.

Public notification of the survey and sampling program will occur by way of a residence-specific mailing within the survey area on a date to be determined by NJDEP. This first public notification letter will be finalized by NJDEP and sent to DuPont for comment prior to mailing to well owners within the survey area that have sufficient information to be contacted via mail. The letters will be mailed by NJDEP or DuPont (to be determined by NJDEP).

In these survey notification letters, NJDEP will request that private drinking water well owners respond to the survey request within 30 days. The notification letters will provide a DuPont toll-free call center number [and the hours of operation (8:00AM - 8:00 PM, Monday - Friday)] that private drinking water well owners can call to participate in the survey. The notification letters will also specify that drinking water well owners can call a NJDEP contact at an 800 number with any questions about the Private Drinking Water Well Survey and Sampling Program. DuPont assumes NJDEP will respond promptly to

these calls. Each letter will also have a unique number clearly identified on the letter that is associated with the well information in the spreadsheet utilized by the call center to record data collected during the survey. This spreadsheet will be based on the information contained in the well search conducted by DuPont.

When a private drinking water well owner calls the DuPont toll-free call center, the caller will be connected with a customer service representative who will verify or edit their contact information as needed, ask the caller a series of question regarding well water use, and will forward the survey data to DuPont (or its authorized representatives). To qualify for sampling, the private drinking water well must be a source of drinking water for the well owner, or for the occupant in the case of rental properties. The well owner will then be called back within three to five days and well sampling will be scheduled, if appropriate.

A second residence-specific notification letter will be sent out approximately 30 days after the date of the first letter. This second letter will request a response within 30 days of the date on the second letter.

### 2.2.2 Sampling and Analysis

At all locations where private drinking water wells are identified during the Private Drinking Water Well survey and Sampling Program and determined to be qualified for sampling, a DuPont Representative will notify NJDEP that the well is qualified for sampling and will sample the well, if permission to sample is granted by the owner. Split samples may be obtained by NJDEP or USEPA Region II during well sampling, if requested. NJDEP and/or USEPA Region II will provide written notice of their request to obtain split samples in advance of the sampling. Prior to sampling the well, the DuPont Representative will obtain coordinates using a Global Positioning System (GPS) to document the well location. Sampling of wells will be conducted as described in the Addendum to the PFOA QAPP (Appendix A). DuPont has selected MPI to be used for well water analyses. As stated in the Introduction, during analysis, the perfluorooctanoate anion ($PFO^-$) is measured; however, the analytical results are mathematically converted and reported as APFO and PFOA by MPI. DuPont has worked with MPI to establish a reliable procedure published in the scientific literature by MPI Research (Risha et al., 2005) for $PFO^-$ measurement and APFO and PFOA reporting.

### 2.2.3 Reporting of Results

DuPont will provide private drinking water well results to NJDEP, USEPA Region II, and the well owner within 7-10 days after the data have undergone the DuPont internal data quality control/quality assurance procedures and are considered final by MPI.

The result report will consist of a letter to the private drinking water well owner and the analytical result sheet (or sheets if duplicate samples were collected) for the sample(s) from MPI. The analytical result sheet will include the sample identification, the date sampled, the APFO and PFOA result reported, the limit of detection, and the limit of quantification.

If the PFOA concentration measured in the drinking water well is equal to or greater than 0.40 ppb, DuPont will inform the well owner that the well is qualified to receive an offer from DuPont to provide drinking water for consumption that is below 0.40 ppb PFOA. If the PFOA concentration measured is less than 0.40 ppb, the well owner will be thanked for participating in the survey and sampling program.

DuPont, NJDEP and USEPA Region II will conduct monthly reviews of results.

# 3.0 DRINKING WATER PROVISIONS

As stated in Section 1.0, in the event that any of the sampled private drinking water wells measure 0.40 ppb or greater PFOA, DuPont will offer to take appropriate measures to provide drinking water for consumption that is below 0.40 ppb PFOA.

There are several possible alternative means of providing a resident with drinking water for consumption that contains below 0.40 ppb PFOA. Which alternative will be offered is a function of the specific conditions, permit requirements and other variables encountered at the residence where the private drinking water well is located. The alternative offered will be determined by DuPont and subject to reasonable terms and conditions. The offer will be subject to the drinking water well owners consent, but DuPont shall have no obligation to offer more than one alternative. Possible alternatives include:

- Connecting to a public water supply, provided the PFOA in that public water supply contains less than 0.40 ppb PFOA, where the well owner is responsible for future water bills,
- Providing bottled water, or
- Installing a point of treatment granulated activated carbon (GAC) treatment system at the residence.

Upon acceptance of the treatment offer by the resident, DuPont will act with deliberate speed to provide the drinking water alternative proposed. If connection to a public water supply or installation of the GAC treatment system takes longer that 30 calendar days, DuPont may provide bottled water as an interim measure. DuPont will execute operation and maintenance agreements with each owner who has accepted the offer for GAC treatment. DuPont will provide for operation and maintenance of the GAC treatment consistent with the specific terms of these agreements.

## 3.1 GAC Treatment System Monitoring

Following installation of a GAC treatment system, DuPont will notify NJDEP and USEPA Region II of the installation. In addition, post installation monitoring of the GAC treatment system will be conducted, as described below.

Quarterly monitoring of private water systems receiving treatment will consist of two after-treatment samples designated "Bed1" and "Bed2." The "Bed2" sample will only be analyzed if the APFO and PFOA results for the "Bed1" sample are non-quantifiable (NQ) or greater. NQ indicates that the result is between the limit of detection and the limit of quantification, which are determined quarterly. If the "Bed1" APFO result is NQ or greater, "Bed1" and "Bed2" samples may be collected and analyzed from each GAC treatment system on a monthly basis. The monitoring data will be used to develop a carbon bed replacement schedule. The carbon replacement schedule likely will vary based on water withdrawal rates.

Once a year, a prior to treatment sample (untreated or source water) will be taken. This annual sample will be designated "PT." (Figure 2 provides the typical location of the sampling port for the "PT" sample.) If the concentration of PFOA in the "PT" sample is less than 0.40 ppb for two consecutive annual sampling events, then the untreated water sampling frequency will change from annually to quarterly so that DuPont will be able to determine whether the water system's source water prior to treatment is less than 0.40 ppb of PFOA for four consecutive quarters. If the water system's source water prior to treatment is contains than 0.40 ppb of PFOA for four consecutive quarters, DuPont will remove the GAC treatment system. Following termination of treatment, DuPont will conduct annual monitoring of the water system source water for five years to verify that less than 0.40 ppb of PFOA is maintained.

# 4.0 SCHEDULE

Work relating to Sections 2.0 (Private Drinking Water Well Survey and Sampling Program) is already ongoing. Survey notification letters to drinking water well owners are being finalized by NJDEP and the DuPont call center is being set up. Public notification of the survey and sampling program will occur by way of a residence-specific mailing within the survey area on a date to be determined by NJDEP. The second residence-specific mailing will be sent out on approximately 30 days after the date of the first notification, to those well owners who have not responded to the initial request to participate in the survey. DuPont, NJDEP and USEPA Region II will conduct monthly reviews of the results.

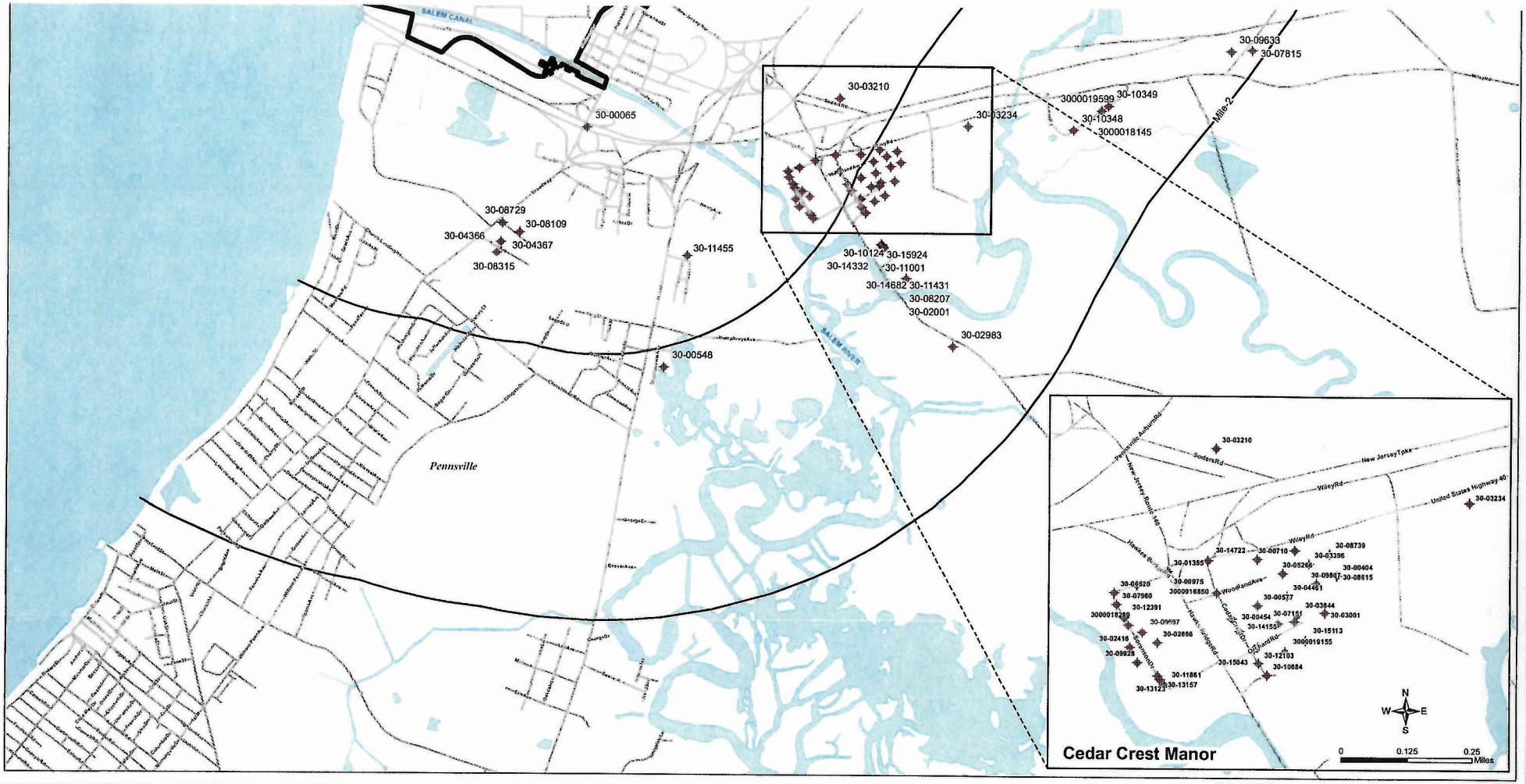
# 5.0 REFERENCES

DuPont. 2007. *Perfluorooctanic Acid Groundwater Investigation Work Plan, DuPont Chambers Works, Deepwater, New Jersey*. May.

DuPont. 2008. Letter from Kathryn McCord, Vice President, Risk Management (DuPont) to Mr. Leonard Romino, Assistant Director, New Jersey Department of Environmental Protection, Site Remediation Program. October 30.

Risha, K., *et. al.* "Method for Trace Level Analysis of C-8, C-9, C-10, C-11 and C-13 Perfluorocarbon Carboxylic Acids in Water." *Anal. Chem.*, Vol. 77, pp. 1503-1508 (2005).

# FIGURES





## Legend

- Tentative Indentified Private Drinking Water Wells
- Property Boundary
- Road
- Railroad

N
W E
S

0 0.25 0.5
Miles

DUPONT

CORPORATE REMEDIATION GROUP

*An Alliance between DuPont and URS Diamond*

BMP 19
Barley Mill Plaza
Wilmington, DE 19805

# DuPont Chambers Works 2-Mile Residential/Business Private Well Search Area

**DuPont Chambers Works Site**
**Deepwater, New Jersey**

| | |
|---|---|
| Created/Revised: MKL | DuPont Project Number: xxxxxx |
| Date: 09/12/2008 | URSD Project Number: 18985513.00002 |
| Rev Number: 2: Date: 02/06/2009 | Figure Number: 1 |
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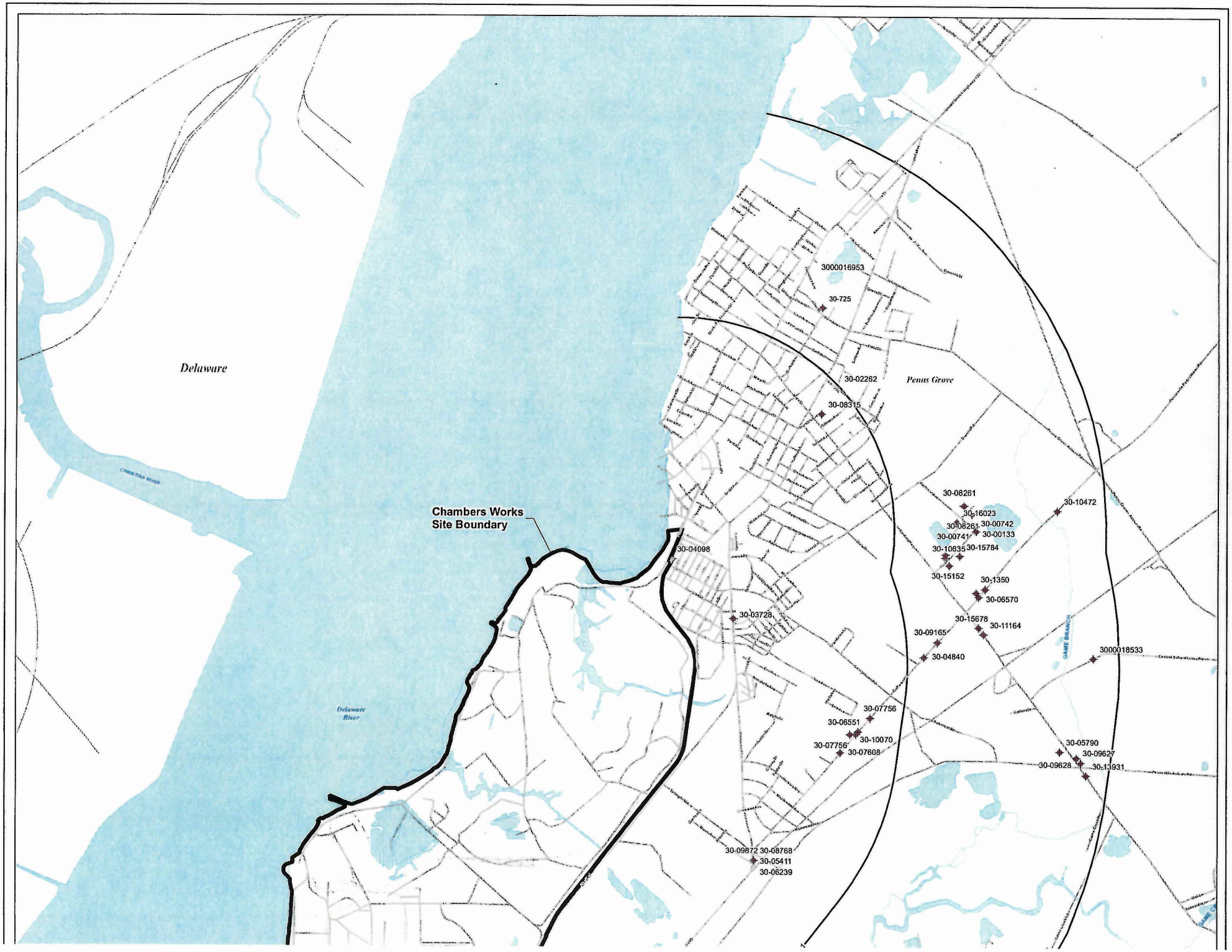
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Penns Grove
Delaware River
Chambers Works
Site Boundary
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30-725
30-02262
30-08315
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30-08261
30-16023
30-08261
30-00742
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30-05411
30-06239

# APPENDICES

# APPENDIX A

# DUPONT CHAMBERS WORKS ADDENDUM TO THE PFOA QAPP - DRINKING WATER SAMPLING

# DuPont Chambers Works
# Addendum to the PFOA QAPP

## Drinking Water Sampling

This addendum to the *Perfluorooctanoic Acid (PFOA) Quality Assurance Project Plan (QAPP) with Sampling and Analysis Plan* (DuPont, 2007) describes the sampling procedures which will be followed to obtain drinking water samples in the vicinity of the Chambers Works facility. Drinking water investigation activities will be conducted as described in the *Private Drinking Water Well Survey and Sampling Work Plan* (DuPont, 2009).

All work completed as part of the drinking water investigation will be performed in accordance with methodologies and procedures described in the PFOA QAPP and this QAPP Addendum. Collectively, the Sampling Work Plan, the PFOA QAPP, and this scope provide the procedures for sampling and analysis.

### Drinking Water Sampling

Drinking water collected from residential locations will be obtained from taps and will represent raw/untreated water samples, if possible. Drinking water samples will be collected from basement or outside faucet taps in order to by-pass any treatment systems. If a residence does not have a faucet with untreated water, it will be noted by the samplers that treated water was collected. All taps will be flushed for fifteen minutes as specified in the *Field Sampling Procedures Manual* (NJDEP, 2005). Should residents object to the 15 minute purge, samplers will propose to purge taps for a minimum of two minutes prior to collecting the water sample. Residential wells that are reportedly not used on a routine basis will be purged through the tap to remove two to three pressure tank volumes, if possible, in order to provide a representative drinking water sample. The following procedure will be followed during sampling from taps:

1. Locate an appropriate tap water source (that will provide a raw/untreated water sample).
2. Open the valve and allow water to run for at least 15 minutes (two minutes if the resident objects) to flush the valve system and supply lines.
3. Remove the bottle cap, place the bottle under the tap, and fill. If the bottle will not fit under the tap faucet, then look for another appropriate source. Do not use a secondary container to fill the bottle.
4. Recap the sample bottle.
5. Affix a sample label, unless the label was affixed by the laboratory.
6. Place the sample in a cooler of ice.

7. Complete the COC form

General instructions for sampling are described in the PFOA QAPP, section 3.3.1, and are important to minimize the possibility of introducing PFOA contamination into samples.

To further ensure against cross-contamination between drinking water sampling locations, the sampler collecting the drinking water samples will wear clean, disposable latex and/or nitrile gloves and limit his/her contact with the samples. Sample bottles and containers will be prepared by the contracted laboratory and provided to the field teams. Sample bottles will not be cleaned or reused in the field. Drinking water samples will be collected directly from the tap; no tubing or secondary containers will be used.

Drinking water samples will be analyzed for PFOA and APFO using the analytical methodology discussed in Section 5.1.1 of the PFOA QAPP and in the Sampling Work Plan.